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1: Heart Dis. 2002 Jan-Feb;4(1):18-25. Related Articles, Links

Neointima formation after stent implantation in an experimental model of restenosis: polytetrafluoroethylene-covered versus uncovered stainless steel stents.

Sick PB, Brosteanu O, Niebauer J, Hehrlein C, Schuler G.

Heart Center, Department for Internal Medicine/Cardiology, University of Leipzig, Germany. sickp@medizin.uni-leipzig.de

The aim of the study was to assess whether stents covered with a membrane of polytetrafluoroethylene spanned over the mashes of a sandwich-configured double stent (n = 15) prevent migration of smooth muscle cells through stent spaces, leading to less neointima formation compared with uncovered stainless steel stents (n = 14) in iliac arteries of male Chinchilla Bastard rabbits (n = 18). Lumen stenosis was assessed by quantitative angiography immediately before the animals were killed 5 weeks after stent deployment. Neointima formation was quantified by histomorphometric analysis. There were large regional and individual differences in neointima formation, leading locally to a significantly higher degree of stenosis in covered stents (histologically, 76.0 +/- 13.7 vs. 62.9 +/- 12.9%; angiographically, 33.5 +/- 21.1 vs. 7.8 +/- 8.8%) compared with uncovered stents, though mean neointimal and lumen area values were not significantly different. In conclusion, polytetrafluoroethylene-covered stents do not prevent neointima formation compared with uncovered stents. Although the membrane reduces local smooth muscle cell migration, the neointima hyperplasia at the proximal and distal ends of a covered stent stimulates migration along its longitudinal axis. In this stent-restenosis model, regional and individual proliferation processes and not the membrane-covering strut-to-strut distances determine lumen restenosis.

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